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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/676,656 | 10/01/2003 | Ronald S. Cok | 87021THC | 8977 |

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Thomas H. Close
Patent Legal Staff
Eastman Kodak Company
343 State Street
Rochester, NY 14650-2201

EXAMINER

HON, SOW FUN

ART UNIT

PAPER NUMBER

1772

DATE MAILED: 05/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/676,656

Applicant(s)

COK, RONALD S.

Examiner

Sow-Fun Hon

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1772

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 February 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) 25-31 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

Rejection Withdrawn

1. The 35 U.S.C. 112, 2nd paragraph rejection of claim 22 is withdrawn due to Applicant's amendment dated 02/28/06.
2. The 35 U.S.C. 102(e) rejection of claims 1, 5-6, 22 as being anticipated by Glatkowski, and the 35 U.S.C. 103(a) rejection of claims 3, 7-9 over Glatkowski as the sole reference, is withdrawn due to Applicant's arguments over the anticipation of independent claim 1.

Rejections Repeated

3. The 35 U.S.C. 103(a) rejections of claims 2, 4, 10-21, 23-24 over Glatkowski as the primary reference are repeated for the same reasons previously of record in the Office action dated 11/29/05.

New Rejections

Claim Rejections - 35 USC § 112

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claim 22 recites the limitation "the layers of carbon nanotubes" in independent claim 1 which recites "a layer of carbon nanotubules". There is insufficient antecedent basis for this plurality of carbon nanotubules in the claim.

Claim Rejections - 35 USC § 103

5. Claims 1, 3, 5-9, 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Glatkowski (WO 02/076724 A1), as evidenced by Ohtsu (US 6,436,591).

Regarding claim 1, Glatkowski teaches a filter (page 14, lines 23-24), comprising a layer of nanotubules covered by a layer of polymeric resin binder (material, page 13, lines 16-17). The nanotubules are carbon nanotubules that form a conductive film (page 9, lines 1-7). Glatkowski fails to teach a specific embodiment where the filter comprising the layer of carbon nanotubules, covered by a layer of polymeric resin binder, is a color filter wherein the layer of polymeric resin binder is colored.

However, Glatkowski teaches that the polymeric resin binder can be colored (coloring agent, binder, page 15, lines 5-6). Thus it would have been obvious to one of ordinary skill in the art to have colored the polymeric resin binder covering the conductive film layer of carbon nanotubules in the filter of Glatkowski, for the purpose of providing a conductive color filter, as evidenced by Ohtsu.

Ohtsu teaches a conductive color filter (column 7, lines 20-30), which can be black (column 8, lines 1-5), red, green and blue (column 6, lines 60-65), wherein the

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polymer resin binder contains carbon black for the black color filter (matrix, column 8, lines 1-5).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have used a colored polymeric resin binder as the polymeric resin binder in the filter of Glatkowski, in order to provide a color filter, as evidenced by Ohtsu.

Regarding claims 5-6, Glatkowski teaches an embodiment in which the conductive filter has an electrically conductive side and an electrically insulating side formed by a sufficiently thick layer of polymeric resin binder (thicker layer of resin, the resulting film has a conductive surface without conductivity through the thickness, page 36, lines 1-5).

Regarding claims 3, 7-9, Glatkowski fails to teach a specific embodiment where the conductive filter further comprises a transparent conductive electrode in electrical contact with the conductive filter.

However, Glatkowski teaches that a layer of indium tin oxide (page 13, lines 20-25), which is a transparent conductive electrode as defined by Applicant (original claim 7), can be laminated with the conductive filter (page 13, lines 20-25) for the purpose of utilizing the physical properties of the indium tin oxide, and that the laminate has alternating layers of nanotube-containing and non-nanotube containing layers (page 14, lines 1-2).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have provided a transparent conductive electrode on

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the layer of carbon nanotubes, on the side opposite to the layer of colored polymeric resin binder, so that the transparent conductive indium tin oxide electrode is in electrical contact with the conductive color filter of Glatkowski, in order to utilize the physical properties of the indium tin oxide, as taught by Glatkowski. Whether the transparent conductive electrode is deposited upon the conductive color filter, or vice-versa, is immaterial as long as the same end-product is obtained. See MPEP 2113 [R-1].

Regarding claim 22, Glatkowski teaches an embodiment in which the conductive filter is conductive through the thickness of the resultant film (coated with a thin binder while still remaining conductive, page 36, lines 19-20).

Response to Arguments

6. Applicant's arguments have been fully considered but they are not persuasive.

7. Applicant argues that Glatkowski does not teach a conductive color filter comprising a layer of carbon nanotubes covered by a layer of colored resin binder since the reference to coloring agents is made only within the context of additional optional materials that may be incorporated in a nanotube dispersion suitable for forming the conductive nanotube coating itself while Glatkowski includes a teaching as to over-coating a nanotube film with a polymeric material, there is no teaching to incorporate coloring agents in the over-coating to form a conductive color filter, and that further there is no teaching to employ such an overcoated embodiment as a filter, Glatkowski only teaching the use of a plurality of differentially-oriented nanotube film

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layers forming filters or polarizer, not the use of a conductive nanotube layer and a colored polymeric overcoat layer.

Applicant is respectfully apprised that Glatkowski does teach a conductive filter comprising a layer of carbon nanotubes covered by a layer of resin binder, and that the reference to adding coloring agents to polymeric resin can be applied to the polymeric binder overcoating the layer of carbon nanotubes, since the polymeric binder overcoating the layer of carbon nanotubes is part of the conductive filter, for the purpose of providing a conductive color filter, as evidenced by Ohtsu.

8. Applicant argues that the specific embodiments in Glatkowski are only directed to using virgin resin overcoats to form clear and colorless films.

Applicant is respectfully apprised that while the specific embodiments in Glatkowski are only directed to using virgin resin overcoats to form clear and colorless films, Glatkowski also teaches that these laminates form filters (page 14, lines 23-24), and that the polymeric resin binder can be colored (coloring agent, binder, page 15, lines 5-6), and that one of ordinary skill in the art would have colored the polymeric resin binder for the purpose of providing a color filter, as evidenced by Ohtsu.

9. Applicant argues that the layer of ITO taught by Glatkowski is an inorganic overcoat layer alternative to an organic polymeric resin overcoat layer, not as an additional layer to be employed in combination with a polymeric resin overcoat material.

Applicant is respectfully apprised that Glatkowski teaches multi-layered structures wherein the nanotube films are themselves over-coated with a polymeric material (page 13, lines 16-20), wherein each layer may provide a separate

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characteristic (page 13, line 27), implying that several different layers can comprise the multi-layered film. Thus the filter laminate comprising a layer of carbon nanotubes covered by a layer of polymeric resin, and further comprising ITO as a transparent conductive electrode layer in electrical contact with the conductive filter, is within the realm of the invention of Glatkowski, wherein the overcoat layer of polymeric film along with the layer of carbon nanotubes, is colored by the addition of an optional coloring agent, for the purpose of providing a color filter, as evidenced by Ohtsu.

10. Applicant's arguments against the valid use of Ohtsu, Chung, Jones and Yamada are all directed against the valid use of Glatkowski, which have been addressed above.

Any inquiry concerning this communication should be directed to Sow-Fun Hon whose telephone number (571)272-1492. The examiner can normally be reached Monday to Friday from 10:00 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Pyon, can be reached on (571)272-1498. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

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you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

S. Hon

Sow-Fun Hon

05/11/08

[Signature]

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